

**REMARKS**

Reconsideration of this application, as presently amended, is respectfully requested. Claims 1, 5-6 and 10-16 are now pending in the present application. Claims 3-4 and 8-9 have been cancelled and new claims 12-16 have been added by the present Amendment. Claims 1, 3-6 and 8-11 were rejected.

**Claim Rejections – 35 U.S.C. § 103**

Claims 1, 3-6 and 8-11 were rejected under 35 U.S.C. §103(a) as being unpatentable over **Uchida et al.** (USP 4,664,601, previously cited) in view of **Sakagami et al.** (USP 5,961,291, previously cited). For the reasons set forth in detail below, this rejection is respectfully traversed.

Initially, it is noted that independent claims 1, 6 and 11 have been amended to clarify aspects of the invention. More particularly, claims 1, 6 and 11 have been amended to clarify that the pump rotors are rotated by a motor about their own axes. Moreover, claims 1, 6 and 11 have been amended to clarify that the pump rotors are driven in a predetermined pattern comprising a pattern of driving said pump rotors in the order of rotation in a forward direction, stop of the rotation, and rotation in the forward direction.

First, it is respectfully submitted that neither **Uchida** nor **Sakagami** discloses or suggests removing deposited products by a device having “a motor configured to rotate said pump rotors *about their own axes*...in accordance with a predetermined pattern,” as recited in claim 1, or a method of “rotating said pump rotors *about their own axes by a motor* in accordance with a predetermined pattern,” as recited in claims 6 and 11. **Uchida** discloses a typical positive-

displacement vacuum pump, but does not teach removing deposited products by rotating the pump rotors about their own axes in a predetermined pattern. **Sakagami** discloses a turbo vacuum pump and teaches scraping off deposited reaction products *by displacing a rotor by magnetic bearings*, but does not teach removing deposited products by rotating the pump rotors *about their own axes*.

The Examiner asserts, "since the magnetic bearing rotates the shaft, it is considered a motor" (see lines 1-4 of the *Response to Arguments* on page 5 of the Office Action). However, from the technical viewpoint, the magnetic bearing cannot rotate the shaft about its own axis because the magnetic bearing supports the shaft without physical contact. A person of ordinary skill in the art would not consider the magnetic bearing as a motor.

The magnetic bearing of **Sakagami** is designed to displace a rotor only in a radial direction or an axial direction, but cannot rotate the rotor about its own axis, because the magnetic bearing supports the rotor without physical contact. The attached "Explanatory Figure" illustrates the manner of displacing the rotor. If a foreign substance (reaction product) exists between the rotor and the stator, when the magnetic bearing causes the rotor to perform a displacement, the rotor is rotated about its own axis *upon contact with the foreign substance*, as shown in the figure. This is because the rotor, levitated by the magnetic bearing, is completely free to rotate about its own axis. Since the rotor is rotated freely *by the contact with the foreign substance*, the rotor cannot scrape off the foreign substance positively.

Second, it is respectfully submitted that **Sakagami** does not provide any motivation to use a motor for removing the reaction product. In particular, the turbo vacuum pump of

**Sakagami** includes both the magnetic bearing and the motor. However, **Sakagami** teaches use of the magnetic bearing to remove the reaction product, rather than the motor. In this regard, **Sakagami** describes, in column 8, lines 56 to 59, "the magnetic bearings are generating a sufficient floating force, but the torque of the motor for driving the rotor may be so low that it cannot accelerate the rotor". This description implicitly denies use of the motor for removing the reaction product.

Moreover, it is respectfully submitted that there is no reasonable rationale for combining the references. More particularly, while both the positive-displacement vacuum pump of **Uchida** and the turbo vacuum pump of **Sakagami** are vacuum pumps, these two types of vacuum pumps differ greatly in principle of operation and structure. For example, the turbo vacuum pump typically has the magnetic bearing for supporting the rotor. However, the positive-displacement vacuum pump *cannot use* the magnetic bearing, because a pair of rotors is arranged with a slight gap therebetween and the rotors must be supported rigidly. In the present case, the technique of removing the reaction product by the displacement of the rotor using the magnetic bearing as disclosed by **Sakagami** cannot be applied to the positive-displacement vacuum pump because they are completely different in structure.

Finally, it is respectfully submitted that neither **Uchida** nor **Sakagami** discloses or suggests rotating the pump rotors in the order of the forward direction, stop of the rotation, and the forward direction, as presently recited in the independent claims.

A rejection under §103 requires that the combination of teachings applied against the claims must disclose, suggest or render obvious all elements recited in the claims. As discussed

above, it is respectfully submitted that the combination of **Uchida** and **Sakagami** does not disclose, suggest or render obvious all elements recited in independent claims 1, 6 and 11. Accordingly, it is submitted that each of claims 1, 6 and 11, and claims dependent therefrom, patentably distinguish over the combination of **Uchida** and **Sakagami**. Reconsideration and withdrawal of the rejection under §103 are respectfully requested for at least the reasons discussed above.

Further, as indicated in *KSR International v. Teleflex Inc.*, 127 S. Ct. 1727, 1741 (2007), “[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” That is, an Examiner must “identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does”.

The Examiner’s rationale to support the combination of references is that it would make the pump of **Uchida** more efficient (see page 3, Item 5 of the present Office Action). However, as discussed above, the technique of removing the reaction product by the displacement of the rotor using the magnetic bearing as disclosed by **Sakagami** cannot be applied to the positive-displacement vacuum pump because these two pumps are completely different in structure. Therefore, it is respectfully submitted that the given rationale for combining the references is unsupported by the technology of the references and is therefore inadequate. Accordingly, the rejection under §103 is improper for this additional reason.

Application No.: 10/524,688  
Art Unit: 3746

Amendment under 37 C.F.R. §1.111  
Attorney Docket No.: 052078

### **New Claims**

New claims 12-16 have been added by the present Amendment. New independent claim 12 recites "a motor configured to rotate said pump rotors about their own axes...in accordance with a predetermined pattern when said vacuum pump is started". New independent claims 14 and 16 recite "rotating said pump rotors about their own axes by a motor in accordance with a predetermined pattern when said vacuum pump is started". It is submitted that these features are not disclosed or suggested by the cited references for the same reasons set forth above with respect to independent claims 1, 6 and 11.

### **CONCLUSION**

In view of the foregoing, it is submitted that all pending claims are in condition for allowance. A prompt and favorable reconsideration of the rejection and an indication of allowability of all pending claims are earnestly solicited.

If the Examiner believes that there are issues remaining to be resolved in this application, the Examiner is invited to contact the undersigned attorney at the telephone number indicated below to arrange for an interview to expedite and complete prosecution of this case.

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If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

**WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP**

A handwritten signature in black ink, appearing to read "William M. Schertler". The signature is fluid and cursive, with the first name "William" and middle initial "M." being more legible than the last name "Schertler".

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Attachments: Explanatory Figure

Reference Figure

Sakagami (USP 5,961,291)

